

Amendments to Claims

1. **(Previously Amended)** A fuel cell stack having:
a plurality of fuel cells disposed between current-collecting end plates and
having water therein; and
at least one reactant gas manifold;
5 characterized by the improvement comprising:
each said at least one reactant gas manifold comprising either (a) a single
wall, with a VIP or GFP disposed inside or outside said single wall, or (b) a double
wall forming a chamber, said chamber containing a vacuum, a low thermal
conductivity gas, a VIP or a GDF; and
10 an insulator panel disposed on an external surface of each of said end plates,
each insulator panel comprising either (a) a hollow chamber containing a vacuum or
a low thermal conductivity gas, or (b) a VIP, or (c) a GFP.

2. **(Currently Amended)** A fuel cell stack according to claim 1 wherein:
said fuel cell stack has a plurality of said reactant gas manifolds; and
the insulation provided by said manifolds and said insulator panels
~~correspond with the mass times heat capacity, external surface area and water~~
5 ~~inventory of said fuel cell stack~~ is sufficient so that the water in said stack is not
totally frozen when said fuel cell stack is inoperative in an ambient environment for
greater than fifty minus-degree-days.

3. **(Currently Amended)** A fuel cell stack according to claim 1 wherein:
said fuel cell stack has a plurality of said reactant gas manifolds; and
the insulation provided by said manifolds and said insulator panels
~~correspond with the mass times heat capacity, external surface area and water~~
5 ~~inventory of said fuel cell stack~~ is sufficient so that the water in said stack is not

totally frozen when said fuel cell stack is inoperative in an ambient environment for about 100 minus-degree-days.

4. **(Currently Amended)** A fuel cell stack according to claim 1 wherein:
said fuel cell stack has a plurality of said reactant gas manifolds; and
the insulation provided by said manifolds and said insulator panels

~~correspond with the mass-times-heat capacity, external surface area and water~~
5 ~~inventory of said fuel cell stack~~ is sufficient so that the water in said stack is not
totally frozen when said fuel cell stack is inoperative in an ambient environment for
about 150 minus-degree-days.

5. **(Original)** A fuel cell stack comprising:
a plurality of fuel cells disposed between current-collecting end plates; and
an insulator panel disposed on an external surface of each of said end plates,
each insulator panel comprising either (a) a hollow chamber containing a vacuum or
5 a low thermal conductivity gas, or (b) a VIP, or (c) a GFP.

6. **(Original)** A fuel cell stack according to claim 5 wherein said insulator
panels comprise either (a) a VIP or (b) a GFP with an external film of (c) plastic or
(d) resin/fiberglass composite for enhanced structural integrity.

7. **(Original)** An insulated reactant gas manifold for a fuel cell stack
comprising either (a) a single wall, with a VIP or GFP disposed inside or outside said
single wall, or (b) a double wall forming a chamber, said chamber containing a
vacuum, a low thermal conductivity gas, a VIP or a GFP.

8. **(Original)** A manifold according to claim 7 wherein said double wall
forming a chamber comprises a layer of either (c) plastic or (d) resin/fiberglass
composite on the surfaces of (e) a VIP or (f) a GFP for enhanced structural integrity.